


### SIDACtor® Series - DO-15



#### Agency Approvals

Agency	Agency File Number
	E133083

#### Pinout Designation

Not Applicable

#### Schematic Symbol



#### Description

The DO-15 series are designed to protect baseband equipment such as modems, line cards, CPE and DSL from damaging overvoltage transients.

The series provides a cost-effective through-hole solution that enables equipment to comply with global regulatory standards.

#### Features and Benefits

- Low voltage overshoot
- Low on-state voltage
- Does not degrade surge capability after multiple surge events within limit.
- Low capacitance
- Fails short circuit when surged in excess of ratings
- 2nd level interconnect is Pb-free per IPC/ JEDEC J-STD-609A.01
- RoHS compliant, lead-free and halogen-free.

#### Applicable Global Standards

- TIA-968-A
- TIA-968-B
- ITU K.20/21/45 Enhanced Level\*
- ITU K.20/21/45 Basic Level
- GR 1089 Inter-building\*
- GR 1089 Intra-building
- IEC 61000-4-5 2nd edition
- YD/T 1082
- YD/T 993
- YD/T 950

\* A/B-rated parts require series resistance

#### Electrical Characteristics

Part Number	Marking	$V_{DRM}$ @ $I_{DRM}=5\mu A$	$V_S$ @ 100V/ $\mu s$	$I_H$	$I_S$	$I_T$	$V_T$ @ $I_T=2.2$ Amps	Capacitance @ 1MHz, 2V bias	
		V min	V max	mA min	mA max	A max	V max	pF min	pF max
P0080GALRP	P-8A	6	25	50	800	2.2	4	10	30
P1100GALRP	P11A	90	130	150	800	2.2	5	30	60
P1300GALRP	P13A	120	160	150	800	2.2	5	25	40
P1500GALRP	P15A	140	180	150	800	2.2	5	25	40
P1800GALRP	P18A	170	220	150	800	2.2	5	25	40
P2300GALRP	P23A	190	260	150	800	2.2	5	25	30
P2600GALRP	P26A	220	300	150	800	2.2	5	25	30
P3100GALRP	P31A	275	350	150	800	2.2	5	10	20
P3500GALRP	P35A	320	400	150	800	2.2	5	20	30
P1100GBLRP	P11B	90	130	150	800	2.2	5	30	60
P1300GBLRP	P13B	120	160	150	800	2.2	5	25	40
P1500GBLRP	P15B	140	180	150	800	2.2	5	25	40
P1800GBLRP	P18B	170	220	150	800	2.2	5	25	40
P2300GBLRP	P23B	190	260	150	800	2.2	5	25	30
P2600GBLRP	P26B	220	300	150	800	2.2	5	25	30
P3100GBLRP	P31B	275	350	150	800	2.2	5	20	30
P3500GBLRP	P35B	320	400	150	800	2.2	5	20	30
P4500GBLRP	P45B	400	530	150	800	2.2	5	20	45
P4500GCLRP	P45C	400	530	50	800	2.2	5	20	45

Notes:  
 - Absolute maximum ratings measured at  $T_A = 25^\circ C$  (unless otherwise noted).  
 - Components are bi-directional.

### Surge Ratings

Series	$I_{PP}$			$I_{TSM}$
	10/560 <sup>1</sup> 10/560 <sup>2</sup>	10/1000 <sup>1</sup> 10/1000 <sup>2</sup>	5/310 <sup>1</sup> 10/700 <sup>2</sup>	50 / 60 Hz
	Amps min	Amps min	Amps min	Amps min
A	50	45	-	20
B	100	80	100	25
C	-	-	150	25

Notes:

1 Current waveform in  $\mu$ s

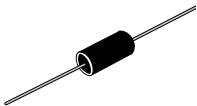
2 Voltage waveform in  $\mu$ s

- Peak pulse current rating ( $I_{PP}$ ) is repetitive and guaranteed for the life of the product that remains in thermal equilibrium.

-  $I_{PP}$  ratings applicable over temperature range of -40 to +85°C

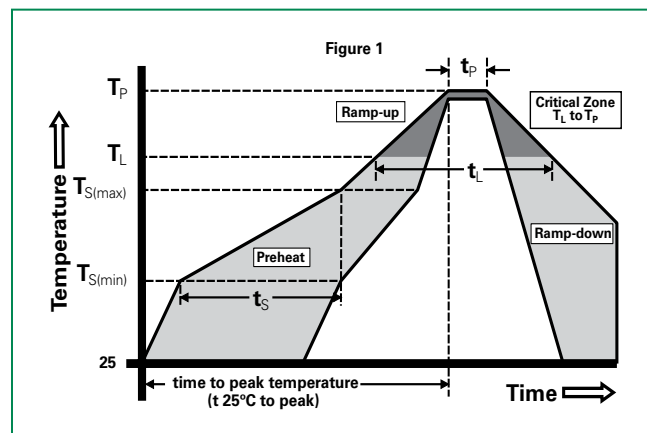
- The component must initially be in thermal equilibrium with -40°C  $\leq$  T<sub>j</sub>  $\leq$  +150°C

### Thermal Considerations

Package	Symbol	Parameter	Value	Unit
 DO-15	T <sub>J</sub>	Operating Junction Temperature Range	-40 to +150	°C
	T <sub>S</sub>	Storage Temperature Range	-65 to +150	°C
	R <sub>θJA</sub>	Thermal Resistance: Junction to Ambient	60	°C/W

### Soldering Parameters

Reflow Condition		Pb-Free assembly (see Fig. 1)
Pre Heat	- Temperature Min (T <sub>s(min)</sub> )	+150°C
	- Temperature Max (T <sub>s(max)</sub> )	+200°C
	- Time (Min to Max) (t <sub>s</sub> )	60-180 secs.
Average ramp up rate (Liquidus Temp (T <sub>L</sub> ) to peak)		3°C/sec. Max.
T <sub>S(max)</sub> to T <sub>L</sub> - Ramp-up Rate		3°C/sec. Max.
Reflow	- Temperature (T <sub>L</sub> ) (Liquidus)	+217°C
	- Temperature (t <sub>L</sub> )	60-150 secs.
Peak Temp (T <sub>p</sub> )		+260(+0/-5)°C
Time within 5°C of actual Peak Temp (t <sub>p</sub> )		30 secs. Max.
Ramp-down Rate		6°C/sec. Max.
Time 25°C to Peak Temp (T <sub>p</sub> )		8 min. Max.
Do not exceed		+260°C



### Additional Information



Datasheet



Resources

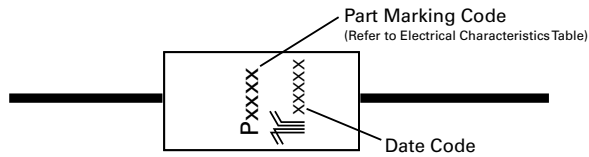


Samples

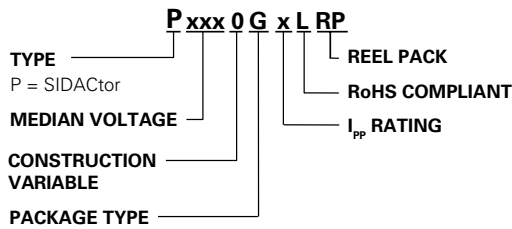
### Physical Specifications

Lead Material	Copper Alloy
Terminal Finish	100% Matte-Tin Plated
Body Material	UL recognized epoxy meeting flammability classification V-0

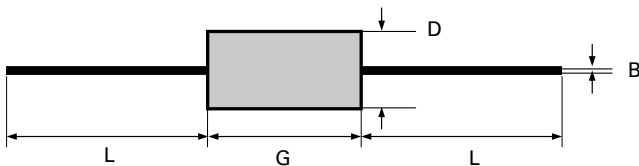
**Part Marking**



**Part Numbering**



**Dimensions – DO-15**



Dimension	Inches		Millimeters	
	MIN	MAX	MIN	MAX
<b>B</b>	0.028	0.034	0.711	0.864
<b>D</b>	0.12	0.14	3.048	3.556
<b>G</b>	0.235	0.27	5.969	6.858
<b>L</b>	1		25.4	

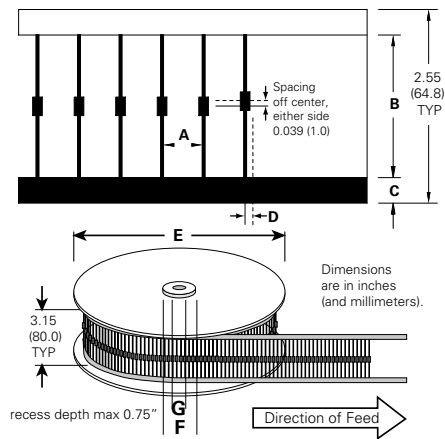
**Packing Options**

Package Type	Description	Quantity	Added Suffix	Industry Standard
G	DO-15 Axial Tape & Reel	5000	RP	EIA-RS-296-D

**Environmental Specifications**

<b>High Temp Voltage Blocking</b>	80% Rated $V_{DRM}$ ( $V_{AC Peak}$ ) +125°C or +150°C, 504 or 1008 hrs. MIL-STD-750 (Method 1040) JEDEC, JESD22-A-101
<b>Temp Cycling</b>	-65°C to +150°C, 15 min. dwell, 10 up to 100 cycles. MIL-STD-750 (Method 1051) EIA/JEDEC, JESD22-A104
<b>Biased Temp &amp; Humidity</b>	52 $V_{DC}$ (+85°C) 85%RH, 504 up to 1008 hrs. EIA/JEDEC, JESD22-A-101
<b>High Temp Storage</b>	+150°C 1008 hrs. MIL-STD-750 (Method 1031) JEDEC, JESD22-A-101
<b>Low Temp Storage</b>	-65°C, 1008 hrs.
<b>Thermal Shock</b>	0°C to +100°C, 5 min. dwell, 10 sec. transfer, 10 cycles. MIL-STD-750 (Method 1056) JEDEC, JESD22-A-106
<b>Autoclave (Pressure Cooker Test)</b>	+121°C, 100%RH, 2atm, 24 up to 168 hrs. EIA/JEDEC, JESD22-A-102
<b>Resistance to Solder Heat</b>	+260°C, 30 secs. MIL-STD-750 (Method 2031)
<b>Moisture Sensitivity Level</b>	85%RH, +85°C, 168 hrs., 3 reflow cycles (+260°C Peak). JEDEC-J-STD-020, Level 1

**Tape and Reel Specification – DO-15**



Symbols	Description	Inches	MM
<b>A</b>	Component Spacing (lead to lead)	0.200 ± 0.020"	5.08 ± 0.508
<b>B</b>	Inner Tape Pitch	2.062 ± 0.059"	52.37 ± 1.498
<b>C</b>	Tape Width	0.250"	6.35
<b>D</b>	Max. Off Alignment	0.048"	1.219
<b>E</b>	Reel Dimension	13"	330.2
<b>F</b>	Max. Hub Recess	3"	76.19
<b>G</b>	Max. Arbor Hole	0.68"	17.27

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